

REMARKS

The Office Action dated August 9, 2004 has been received and carefully studied.

The Examiner rejects claims 1-3 and 8 under 35 U.S.C. 102(b) as being anticipated by Aoki et al., U.S. Patent No. 6,160,262.

Applicants' apparatus provides focusing of an ion beam so as to expand (or contract) the length of a ribbon beam of ions. Such focusing may be combined with perturbation corrections involving deflection and aberration-correction.

Aoki et al. provide deflection of a ribbon beam of ions, which may be accompanied by some geometrical focusing. Consequently, Aoki et al. provide a uniform dipole magnetic field along the length of the ribbon beam; they provide coils around the long arms of their frame and excite them by currents in the same direction, so that at one end both arms have a north pole and at the other end both arms have a south pole; there is no need for coils around the short arms, and indeed such coils should be avoided.

Applicants provide a quadrupole field by a coil excitation arrangement which provides a magnetic field oriented across the frame from one long arm to the other and having a magnitude which varies lineally along the length of the ribbon beam so as to provide a quadrupole effect; coils around the short arms are needed to prevent short-circuit of the magnetic field.

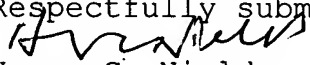
By the foregoing amendment Applicants' claims have been amended so as to emphasize the foregoing distinctions. Claim 1

has been replaced by amended claim 1 and new claims 15 and 16, each of which recites "variable focusing", which is present in all embodiments of the invention, although deflection and aberration-correction may also be present in such embodiments. . Amended claim 1 recites that the coil units around the long core members generate currents in opposite directions (whereas Aoki et al.'s coils generate currents in the same direction). (Amended claim 1 is essentially the same as original claim 5 rewritten in independent form and therefore allowable; original claim 5 has therefore been canceled.) New claim 15 recites that the short arms are provided with coil units; Aoki et al's short arms do not (and should not) have coil units. New claim 16 recites that the magnetic field B runs across the width of the gap of the frame and has a quadrupole format; Aoki et al's magnetic field, as described in his claim 1 and elsewhere, is uniform and along the length of the gap. Claim 8 has been amended to recite the presence of correction of perturbations in addition to the fundamental quadrupole field. Claim 14 has been amended to clarify the location of the various coil units.

The allowance of claims 9-14, and the allowability of claims 4-7 are noted with appreciation.

Reconsideration and allowance of all pending claims is respectfully requested.

Respectfully submitted,


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